Paper 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LOREN D. LOWER

Appeal 1997-2575
Application 08/524,661[1]

Before: DOWNEY and WILLIAM F. SMITH, Administrative Patent Judges, and McKELVEY, Senior Administrative Patent Judge.

McKELVEY, Senior Administrative Patent Judge.

DECISION ON APPEAL UNDER 35 U.S.C. § 134

The appeal is from a decision of the Primary Examiner rejecting claims 1-20. We reverse.

A. Findings of fact

The record supports the following findings by a preponderance of the evidence, as well as any findings made in

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[1] Application for patent filed 8 September 1995. The real party in interest is The Dow Corning Corporation.

the discussion portion of this opinion.

The invention

1. The invention relates to a composition for room temperature vulcanizing silicone sealants suitable for formed-in-place gaskets to be used in contact with hot hydrocarbon oil (specification, page 1, lines 6-8) and to methods for making the compositions.

The claims

2. Composition claims 1-10 and method claims 11-20 are in the application.

3. Composition claim 1 reads (paragraph numbering and matter in brackets added) [portions in **bold** are significant with respect to the issues in the appeal]:

> A room temperature curing silicone sealant composition utilizing high moisture fillers, formed by combining, based on the weight of the silicone sealant composition:
>
> [1] 25 to 75% diorganosiloxane based polymer
>
> [a] of viscosity 1 Pa•s to 300 Pa•s,
>
> [b] [and having terminal groups,] in which the terminal groups are selected from the group

consisting of silanol and triorganosilyl groups,

[c] provided that at least 60% of the terminal groups are silanol groups;

[2] 0 to 25% triorganosilyl endblocked polydiorganosiloxane fluid of viscosity 0.1 Pa•s to 10 Pa•s;

[3] **17** to 65% calcium carbonate filler, where the filler contains **greater than 0.25% water** by weight;

[4] 0.01 to 2% tin catalyst;

[5] 0 to 2.0% of an epoxy-functional alkoxysilane; and

[6] an amount of ketoximosilane of the formula:

$$R^3_aSi(ON=CR^1R^2)_{4-a-b}^{R^4_b}$$

[a] where R^1, R^2, and R^3 are monovalent hydrocarbons which may be the same or different from each other, and

[b] a is 0 or 1, and

[c] R^4 is an alkoxy, and

[d] b is 0 to 2, inclusive,

[e] said amount being calculated so that there are **greater than 1.3 moles ketoximosilane per silanol [sic-hydroxyl] equivalent** in the diorganosiloxane based polymer [1] and

the [water in the] calcium carbonate filler [3].

4. According to the specification (page 3, lines 19-21) (emphasis and matter in brackets added):

> The correct amount of [ketoximosilane] crosslinker is determined by the hydroxyl content present from both the silanol on the base polymer [[1] in claim 1 as reproduced supra] and the water content of the filler [[3] in claim 1 as reproduced supra].

5. Accordingly, the language "silanol equivalent" in the language "1.3 moles ketoximosilane per silanol equivalent in the diorganosiloxane based polymer [1] and the calcium carbonate filler [3]" is believed to mean "hydroxyl equivalent."

Examiner's rejection

6. The examiner has rejected claims 1-20 as being unpatentable under 35 U.S.C. § 103(a) over Beers, U.S. Patent 4,514,529 (1985).

Beers

7. Beers, like applicant, concerns a "one component room temperature vulcanizable silicone formed-in-place gasketing sealant ***" (col. 1, lines 7-8).

8. Using the language of applicant's claim 1, Beers describes compositions useful as silicone formed-in-place gasketing sealants which contain the ingredients called for by applicant's claim 1, as follows:

[1] 25 to 90% [applicant claims 25-75%] diorganosiloxane based polymer (col. 2, lines 27-39);

[2] 0 to 40% [applicant claims 0 to 25%] triorganosilyl endblocked polydiorganosiloxane fluid (col. 2, lines 40-47);

[3] 5 to 60% [applicant claims 17 to 65%] calcium carbonate filler (col. 3, lines 7-9) [with additional details concerning the filler to follow];

[4] 0.1 to 0.5% [applicant claims 0.01 to 2%] of a tin catalyst (col. 3, lines 4-6);

[5] no [applicant claims 0 to 2.0%] epoxy-functional alkoxysilane is described as being present by Beers; and

[6] about 2 to about 15% of ketoximosilane [with additional details concerning the ketoximosilane to follow].

9. With respect to the calcium carbonate filler, Beers states (col. 5, lines 37-52):

> Another important aspect of the present invention is the use of a hydrophobic calcium carbonate filler which imparts a desirable oil stabilizing effect as well as a low degree of reinforcement to the polymer to allow for the incorporation of low modulus properties. The amount of hydrophobic filler generally ranges from about 5 to about 60 percent [applicant claims 17 to 65%] by weight with from about 15 to about 45 percent by weight based upon a total composition weight being preferred. It is important to the present invention that the water level of the hydrophobic filler be very low. Accordingly, if small amounts of filler are utilized, that is 15 percent by weight or less, the water level can range up to 0.4 percent by weight based on the total weight of hydrophobic filler. Generally, the water content is 0.2 percent by weight or less with from about 0.1 percent by weight or less being preferred.

10. With respect to the ketoximosilane (which Beers calls an oxime), Beers states, inter alia (col. 5, lines 24-36):

> The amount of the oxime curing agent ranges from about 2 to about 15 percent by weight with from about 4 to about 8 percent by weight being preferred based upon the total weight of the composition.
>
> *****
>
> In order to insure that gellation or viscosity increases do not occur, an excess of oxime crosslinking agents to silanol in the base polymer is utilized as an equivalent ratio of from about 1.2 to about 4.0 with from about 1.5 to about 2.5 being preferred.

Beers Example 3

11. Notwithstanding other portions of the description of the Beer invention, Example 3 describes a silicone sealant having "excellent low modulus properties" (col. 9, line 8) said to have been made with a calcium carbonate filler having 0.4% [applicant claims greater than 0.25%] water. The amount of filler in the composition is said

to have been 28.72% (col. 9, line 27) [applicant claims 17 to 65%].

12. According to Beers, Example 3 demonstrates the influence of filler type and moisture level on behavior of final formed-in-place gasket materials (col. 8, lines 66-67).

Differences between claim 1 and Beers

13. Applicant claims that Beers differs from claim 1 as follows:

a. Beers describes the use of a calcium carbonate filler having less than 0.2% water when the filler is used in amounts which exceed 15% parts by weight (col. 5, lines 47-52), whereas applicant claims at least 17 parts by weight of filler having a water content of more than 0.25%. See generally Appeal Brief, page 4.

b. Applicant claims the use of an oxime crosslinking agent in an amount such that the oxime to hydroxyl equivalents is at least 1.3 whereas Beers is said to describe the use of a lower amount of oxime. See generally, Appeal Brief, pages 4-5.

14. The examiner states (Examiner's Answer, page 4):

> The only distinction between Example 3 and the applicant's claims is the amount of the ketoximosilane present [in Example 3 of Beers is] 1.24 moles of ketoximosilane per mole of silanol in the composition [whereas applicant claims an amount greater than 1.3].

15. The figure 1.24 is based on calculations made by applicant and apparently accepted by the examiner. See, e.g., Appeal Brief, pages 4-5; Examiner's Answer, page 4.[2]

16. In his answer, the examiner further explains, correctly in our opinion, that if the silanol [hydroxyl] content of water in the filler is not considered, then Beers ketoximosilane to silanol ratio would be 12.1 which is manifestly outside the scope of the ketoximosilane to silanol

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[2] The calculations arriving at the 1.24 figure, which had been presented earlier in the prosecution by applicant, are based on an assumption that the Beers dimethylpolysiloxane having a viscosity of 11,000 Centipoise (in Beers Example 3) has a molecular weight of 61,000 (Appeal Brief, page 6). We note that at one point in the prosecution, the examiner observed (Paper 8, page 2):

> It is possible that the applicant's assumption made when calculating the crosslinker to silanol [hydroxyl] content (i.e., molecular weight) are incorrect.

The examiner apparently did not pursue the molecular weight assumption made by applicant based on the polymer viscosity. We have no occasion to second-guess either the applicant or the examiner.

ratio of 1.2 to 4.0 otherwise described by Beers (col. 5, lines 32-36).

"Criticality" of "greater than 1.3" limitation

17. The examiner is of the view that applicant has not establish any "criticality" with respect to the limitation which requires a ketoximosilane to silanol ratio of greater than 1.3.

18. Initially, the examiner notes that applicant describes sealants which can be made using a ratio of 1.2 (specification, page 3, last two lines and page 7, lines 4-5).

19. The examiner also took notice of the properties said to have been obtained[3] with samples A through G (specification, page 13, Table 1) vis-a-vis the properties of

[3] Applicant relies on experimental data set out in the specification in support of the appeal. We likewise have relied on the data and found it material in rendering our decision. Moveover, in reaching our decision, we have made the following assumptions: (1) the data set out in the specification upon which applicant relies is based on actual experimentation, (2) the data is accurately set out in the specification and (3) the data is not based on prophetic examples [see Hoffmann-La Roche, Inc. v. Promega Corp., 1999 U.S. Dist. LEXIS 19059, Civil Action C-93-1748-VRW (N.D. Cal. Dec. 7, 1999) (Findings of Fact 56-60, 63-66, 69, 105-106, 112, 131 and 136 and Conclusions of Law 32 and 35)]. We also have relied on the fact that there is no other data known to applicant or the real party in interest which (1) would tend to contradict the experimental data set out in the specification and (2) was not called to our attention in the brief and/or reply brief on appeal [see 37 CFR § 1.56(b)(2)]. If any assumption is not correct, applicant(s) should immediately notify the board in the form of a request for reconsideration.

the sealant said to have been obtained in Beer Example 3. Those properties, include the following:

Property	Applicant	Beers
Shore A hardness	30-35	30
Elongation	485-622	530
Modulus @ 100%	77-94	66
Tensile strength	247-289	274

20. The examiner acknowledged applicant's argument that the sealant of Beers Example 3 took several days to vulcanize whereas applicant's sealants are said to have tack free times of from 40 to 105 minutes.

21. Accepting arguendo as correct applicant's calculations showing the use of a ratio of oxime to silanol of 1.24 in Beers Example 3, the examiner reasoned that Beers advises those skilled in the art that ratios as high as 4.0 may be used to insure that gelation or viscosity increases do not occur (col. 5, lines 32-36).

22. Based on the evidence, as a whole, the examiner found that applicant had not established that the 1.3 ratio is critical. Moreover, according to the examiner, assuming

arguendo that the 1.3 ratio is critical, it does not render the claimed subject matter non-obvious in light of Beers' teaching to use ratios of up to 4.0.

B. Discussion

If the obviousness issue could have been resolved on the basis of Beers sans Example 3, a decision on the appeal would be relatively straightforward. There is no suggestion in Beers to use a calcium carbonate filler having more than 0.2% water when the filler is used in an amount of more than 15% by weight (col. 5, lines 47-52). However, in the examiner's view, what Beers seems to take away in col. 5, lines 47-52 he gives right back in Example 3. Moreover, the examiner notes that Beers tells us that if there is a gelation or vulcanizing problem, the solution is to add more oxime up to a ratio of 4.0 [applicant's ratio being greater than 1.3]. Furthermore, the examiner notes that many of the properties of the Example 3 sealant are similar to those described by applicant for compositions made according to the claimed invention. Hence, the examiner reasons--not without some basis--that if the product of Example 3 gels in a tube, then the solution to

keeping the Example 3 composition in liquid form until use is to increase the oxime ratio.

Applicant has a different reading of Beers. Applicant's assessment of Beers is that it tells one skilled in the art how much filler to use and the water content of the filler when certain amounts of filler are used. Should a problem develop with gelation, then Beers tells one skilled in the art how to adjust the oxime ratio to avoid the problem. But, applicant's view of Beers is that any gelation problem discussed by Beers is a gelation problem that may occur within the percentage of filler used and the water content of the filler which can be used based on that percentage.

Applicant and the examiner have plausible theories for their respective cases. On balance, however, we are more inclined on this record to agree generally with applicant's assessment of what Beers teaches. Beers teaches the amount of calcium carbonate filler which can be used. When higher amounts of filler are used, the water content must be low, i.e., below 0.2% preferably below 0.1%. On the other hand, when lower amounts of filler are used, the filler may have a higher water content, i.e., up to 0.4%. Beers does not

describe the use of a filler having greater than 0.25% water in combination with an oxime/hydroxyl ratio of 1.3. Example 3 is not a description of Beers invention; rather, it is a description of the influence of the filler. Thus, the Beers teaching that gelation can be avoided by increasing the oxime/hydroxyl ratio is not a teaching of how one goes about making a better Example 3 product. In this respect, it can be noted that Beers was aware of all of his teachings and yet limited his invention to the water contents described in his specification and set out in claim 1 of his patent. If use of a higher oxime/hydroxyl ratio to solve any problem encountered in Example 3 would have been obvious, then Beers as an inventor (an inventor has more knowledge than a person having ordinary skill in the art) surely would have described a broader invention in his patent. Compare In re Kleinman, 484 F.2d 1389, 1392, 179 USPQ 244, 245 (CCPA 1973) (there is no presumption, rebuttable or not, that the holder of a patent had constructive or actual knowledge of another patent when he made the invention; however, it might be significant in weighing the content of a patent as a reference if it can be demonstrated that an inventor had actual knowledge of all

relevant information). In this case, Beers necessarily had knowledge of all information in his patent and did not describe or claim an invention which reads on that claimed by applicant.

For the reasons given, we find that Beers does not teach one skilled in the art that the oxime/hydroxyl ratio of Example 3 can be increased to avoid gelation which is said to have occurred. Rather, one having ordinary skill in the art would recognize only that the Beers gelation solution of increasing oxime is limited to gelation problems within the scope of the compositions he has described and claimed, i.e., those having filler contents less than 15 parts by weight and water contents as high as 0.4% and those having filler contents greater than 15 parts by weight and water contents no higher than 0.2%.

C. Decision

The decision of the examiner rejecting claims 1-20 over Beers is reversed.

REVERSED

MARY F. DOWNEY Administrative Patent Judge	)	
WILLIAM F. SMITH Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
FRED E. McKELVEY, Senior Administrative Patent Judge	)	

cc (via First Class Mail):

DOW CORNING CORPORATION
Patent Department -- Mail CO1232
Midland, MI 48646-0994